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APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
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EXAMINER

1632
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06/22/98
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This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

OFFICE ACTION SUMMARY

☑ Responsive to communication(s) filed on March 30, 1998

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 D.C. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☑ Claim(s) 1-34 and 55-79 is/are pending in the application.
Of the above, claim(s) _____ is/are withdrawn from consideration.
☐ Claim(s) _____ is/are allowed.
☑ Claim(s) 1-34 and 55-79 is/are rejected.
☐ Claim(s) _____ is/are objected to.
☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
☐ The specification is objected to by the Examiner.
☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.
☐ received in Application No. (Series Code/Serial Number) _____.
☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of Reference Cited, PTO-892
☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
☐ Interview Summary, PTO-413
☐ Notice of Draftperson's Patent Drawing Review, PTO-948
☐ Notice of Informal Patent Application, PTO-152

--SEE OFFICE ACTION ON THE FOLLOWING PAGES--

Applicant's arguments filed March 30, 1998 in paper no. 7 have been fully considered but they are not fully persuasive. The amendment has been entered. The declaration by Steven L. Stice, unexecuted, has been considered, but is not fully persuasive

Applicant's election without traverse of group I in Paper No. 5 is acknowledged.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-34 and 55-77 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-36 and 59-86 of copending Application No. 80/888,283. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims are obvious over the claims of '283. The instant claims require the insertion of a desired differentiated cell or cell nucleus into an enucleated oocyte. The claims of '283 require the insertion of a non-serum starved differentiated cell or cell nucleus into an enucleated oocyte. The specification defines the desired differentiated cell nucleus of the specific examples to be non-serum starved as the fibroblast is cultured in 10% FCS. Therefore the desired cell or cell nucleus encompasses at least non-serum starved cell. Thus the instant claims are obvious over the claims of 283.

Claims 1-34 and 55-77 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-35 and 47-77 of U.S. Patent No. 08/888,057. Although the conflicting claims are not identical, they are not

patentably distinct from each other because the instant claims are obvious over the claims of '057. The instant claims are methods of cloning mammals, methods making a mammalian CICM cell line, and mammalian ICM cells, embryos, fetuses, offspring and progeny. The claims of '057 are to methods of cloning pigs, methods making a pig ICM cell line, and pig ICM cells, embryos, fetuses, offspring and progeny. As the specification clearly defines mammal in the instant application to include pigs, the instant claims encompass those of '057. Thus the instant claims are obvious over the claims of '057.

These are provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

The rejection of claims 17-22,25-27,34,57,59,61,64,66,68,71 and 72 under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter has been overcome by the amendment to the claims.

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-16,23,24,28-34,55,56,58,60,62,63,65,67,69,70,78 and 79 are rejected under 35 U.S.C. 101 because (1) the claimed invention is directed to nonstatutory subject matter, and (2) the claimed invention lacks patentable utility.

The claims are drawn to method of cloning mammals, methods of producing an CICM cell line and differentiated cells made by the method of producing CICM cell lines. As such, the claims embody methods of cloning humans, method of producing an CICM cell line from a cloned human and a human embryonic cell made by the method of producing an CICM cell line.

The claimed invention is not considered to be patentable subject matter under 35 U.S.C. 101 because the broadest reasonable interpretation of the claimed invention as a whole embraces a human being. In particular, applicant's claimed invention as set forth in all the independent claims is not limited to non-humans but rather includes within its scope a human being and as such falls outside the scope of protection under 35 U.S.C. 101. Section 101 has also been interpreted to exclude inventions deemed to be immoral. All that the law requires is that the invention should not be frivolous, or injurious to the well-being, good policy, or good morals of society. The word useful therefore is incorporated into the act in contradistinction to mischievous or immoral. It is appropriate that considerations of public policy and morality should only be invoked in rare and unusual circumstances. A claimed invention which embraces a human being and is not limited to non-humans is considered to be one of those rare and unusual circumstances where it is appropriate to invoke the consideration of public policy and morality.

For the reasons noted above, the claimed invention as a whole is directed to nonstatutory subject matter and lacks patentable utility as required by 35 U.S.C. 101. However, applicant can overcome the rejection by inserting the term "non-human" before mammal or as necessary to clearly indicate that the methods result in non-human mammals, non-human chimera, non-human embryos, non-human fetuses and non-human offspring.

Claims 33 and 34 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claims have been amended to contain the phrase "not transformed", but there is no support in the specification for such. Applicant, when amending claims, should point to page and line number for the disclosure which supports the

amendment. Applicant, therefore is requested to point out the support for the phrase "not transformed" or delete it from the claims.

Claims 1-34 and 55-79 remain rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for methods of cloning a bovine, the method comprising inserting a fibroblast or the nucleus of a fibroblast isolated from a 45 day of pregnancy bovine fetus int to the perivitelline space of bovine oocyte matured in vitro to metaphase II and fusing the oocyte and the fibroblast cell or nucleus to form a NT unit, activating the NT unit by incubating NT units at 26-27 hours post-maturation of the oocyte (hpm) incubating in media comprising 5μM ionomycin and 2 mM DMAP for 4 min and culturing the NT units in CR1aa-2 mM DMAP media for 4-5 hours and culturing the activated NT units in CR1aa media containing mouse fibroblast feeder cells for 5-8 days after activation and transferred a host bovine for development of the NT unit into a fetus and/or development into offspring and progeny; and a method of producing a bovine CICM cell by the same method except the transfer to a host bovine is omitted and the cultured activated NT units are desegregated to isolate the inner cell mass of the embryos, bovine fetuses, bovine embryos, bovine offspring, bovine progeny and bovine CICM cell lines, does not reasonably provide enablement for methods of cloning and methods of producing an CICM cell line using any differentiated donor cell type or differentiated cell nucleus type where the donor cell is of any differentiated stage, any method of activation of the NT unit and any length of incubation for the embryo developed from the NT unit to be used to make CICM cells or to be transferred into a host non-human to produce offspring and progeny, non-human mammal embryos, fetuses, offspring or progeny as claimed. In addition, the specification is not enabling for chimeric non-human mammals made by the claimed method. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

The claims are drawn to a method of cloning a mammal comprising inserting a differentiated mammalian cell or cell nucleus, a differentiated mammalian cell or cell nucleus wherein a DNA sequence is inserted, removed or modified, a differentiated CICM cell or cell nucleus, into an enucleated mammalian oocyte, activating the nuclear transfer unit, culturing the activated nuclear transfer unit to greater than the 2-cell stage and transferring the cultured nuclear transfer unit to a host mammal, fetuses, offspring, progeny, transgenic fetuses, transgenic offspring, transgenic progeny, a method of producing a CICM cell line comprising inserting a differentiated mammalian cell or cell nucleus, or a differentiated mammalian cell or cell nucleus wherein a DNA sequence is inserted, removed or modified, into an enucleated mammalian oocyte, activating the nuclear transfer unit, culturing the activated nuclear transfer unit to greater than the 2-cell stage and culturing cells obtained from the nuclear transfer unit, a CICM cell line, differentiated cells, methods of making chimeras, chimeric embryos, chimeric fetuses, chimeric offspring and organs from the various offspring.

The claims are not enabled as the specification does not provide sufficient guidance on cloning a mammal by any of the methods claimed such the artisan could repeat the method and have a reasonable expectation of success at the time of filing in obtaining fetuses, offspring or progeny without undue experimentation. Furthermore, the specification does not provide teachings as to the reproducibility and use of chimeric non-human mammals.

As the re-programming of differentiated cell chromatin is critical to the instant invention, such activation would need to be disclosed by the specification so that the artisan would be able to activate differentiated cell nuclei for the breadth of the claims. Applicant has provided a very specific example wherein cow fetuses at 45 days of pregnancy were disaggregated to obtain fetal fibroblast cells. It is not clear from the specification if such fetal cells were terminally differentiated or at some other stage of development prior to terminal

differentiation. Therefore is it not clear, and such as not been disclosed, if this same method would activate the chromatin in a nuclei from an adult cell, which is generally considered terminally differentiated. For example, the methylation pattern of a differentiated cell is quite different from that of an early embryo, and as is known in the art, methylation of DNA inactivates the genes encoded by that DNA. Thus, the guidance not provided by the specification is if the methylation pattern of the 45 day bovine fibroblasts is like the methylation pattern at later developmental stages, such as adult, that the method described in the specification would be sufficient to re-program the chromatin such that it would re-enter development at the fertilization step. Furthermore, with regards to the age of the cell or the specific cell type, "differentiated" does not appear to be the critical feature. As in applicant's response of March 30, 1998, the USA Today article clear states that the inventors used "rapidly dividing" cells and such are fetal fibroblasts. From the evidence filed, the breadth of "differentiated cell" would not predictably lead to the production of a cloned mammal. In addition, applicant has only provided guidance for concentrations of ionomycin and DMAP, and length of time the NT units are exposed to them, and the particular culture media, CR1, disclosed for the activation process. Again the USA Today article above, state that it took the inventors 20 years to develop the chemical signal that caused the egg to divide. This is evidence that the development of nuclear transfer techniques is not subject to routine experimentation. This fact coupled with the lack of guidance in the specification as to variabilities in these culture conditions that would permit the development of bovines from the claimed method, the claimed method is not enabled for its breadth.

The specification fails to provide guidance on the adaption of the instant method to clone other mammals, such as pigs, sheep, goats and the like. A variability in the length of time it takes pigs, sheep or goat embryos, as examples, to reprogram or to activate the NT unit, which is an embryo, or what conditions it takes for them to reprogram or activate can

not be predicted by the specification. While applicant has disclosed that such other non-bovine mammals can be made by the claimed method, such is seen as speculation on the part of applicant, and not known in the art. Here in lies the secret to successful cloning, reprogramming and activation of the embryos so that cell division occurs to the end of a cloned mammal. Given the paucity of knowledge in these biochemical mechanisms, the specification would need to supply information and direction that would lead to success in the cloning of non-human mammals. The specification does not provide guidance as to the age of the oocyte to be used in the method where the age of the oocyte correlates with the development of a cloned non-human mammal. The specification only provides such guidance and correlation of method with outcome for bovines. The only embodiment of the claim for which applicant has overcome the unpredictability in the art is in the cloning of bovines.

Applicant argues that they have produced seven cloned calves by the claimed method, and have received notable press attention. Applicant's argue that because something has not been done before is not in itself sufficient reason for a rejection. Applicant argues that the art of transgenic animal production is well known for its use and competition. Applicant argues that there method provides a more reliable method of making transgenic non-human mammals as the expression of the transgene can be determined prior to the process of making the mammal.

In view of these arguments, the above limitation to bovines has been given.

Applicant argues that they have produced chimeric calves from both transgenic embryo-derived ES-like cells and transgenic NT derived ES-like cells. Applicant argues that 9 of 11 calves had multiple tissues positive for β-gal staining, including gonadal tissue. Applicant argues that they do not have to teach how to make a useful chimeric animal as the art already has taught such. Applicant cites US Patent 5,690,926 as having claims broadly

drawn to methods of making a chimeric animal using an established ES cell line. These arguments are not persuasive.

The production of chimeric non-human mammals by the disclosed method is unpredictable as it is not possible regulate so that one could reproducibly achieve the same chimeric animal. The particular chimeric made is a matter of chance, and not controlled by any laboratory parameter. If a chimeric calf were made that grew into a cow that had some use in the art, the unpredictability there is obtaining another calf that has such use. Declarant Stice, as well as the Nature Medicine submission, state that 9/11 calves contained the transgene in there gonadal tissue. It can be argued that these calves are transgenic, by the art definition, and not chimeric. The art defines transgenic as containing the transgene in the germ line. By being in gonadal tissue, are not these calves containing the transgene in their germ line? However, the use of the true chimeric calves is not disclosed in the specification and none is apparent. In addition, they can not be reproducibly be made if one of them had a patentable use any more that the germ-line gene containing calves could be. Chimerism is by chance. As for the allowed patent, the examiner has no knowledge of its prosecution history or what evidence was presented for allowance of those claims. As applicant is well aware, the allowance of any patent does not affect the prosecution of another. Each application is examined on its own merits and not the merits of allowed files.

Claims 33 and 34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "transform" has a meaning in the art of being immortalized by the expression of an oncogene, or of containing a DNA sequence introduced to the cell by recombinant techniques. It is not clear if in the context of claims 33 and 34 if applicant

means the cells do not express an oncogene or if they do not contain an exogenously added DNA sequence. The later meaning would be more confusing as some transformed cells are claimed in the production of some cloned mammals.

Applicant's amendment has overcome the rejection of claims 33 and 34 under 35 U.S.C. 112, second paragraph made in the previous office action.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 17-19,25-27,71-73,75 and 77 remain rejected under 35 U.S.C. 102(b) as being clearly anticipated by US Patent 5,057,420 issued October 15, 1991 ('420) for reasons of record.

The claims are drawn to fetuses, offspring and progeny produced by claimed methods of cloning a mammal, and organs from the offspring.

'420 teaches bovine embryo, fetuses and offspring (col. 5-6, table 1). Claims 17-19,25027,71 and 72 do not distinguish the embryos, fetuses, offspring and progeny claimed from the embryos, fetuses and offspring taught by '420. The organs of the offspring are an inherent feature of the offspring, and are anticipated therefore by '420.

Claims 20-22,57,59,61,64,66,68,74 and 76 remain rejected under 35 U.S.C. 102(b) as being clearly anticipated by Hyttinen et al (1994) Bio/Technology 12, 606-608 for reasons of record.

The claims are drawn to transgenic, chimeric and transgenic/chimeric fetuses, offspring and progeny produced by claimed methods of cloning a mammal, and organs from the offspring.

Hyttinen et al teach the production of transgenic and chimeric or mosaic bovine embryos, fetuses and calves (page 606, col. 2, parag. 2 to page 607, col. 2, lines 4). Claims 20-22,57,59,61,64,66 and 68 do not distinguish from the embryos, fetuses, offspring and progeny claimed from the embryos, fetuses and offspring taught by Hyttinen et al. The organs of the offspring are an inherent feature of the offspring, and are therefore anticipated by Hyttinen et al.

Claim 29 remains rejected under 35 U.S.C. 102(b) as being clearly anticipated by Sims et al (1993) Proced, Natl. Acad. Sci. 90, 6143-6147 for reasons of record.

Claim 29 is drawn to a CICM cell line. However, as claim 29 is a product by process claim, a teaching of the same product obtained by a different method serves as anticipatory art against the claim.

Sims et al teach the culture of ICM cells as cell lines 6-10 (page 6146, col. 1, parag. 2 and table 4). Claims 29 does not distinguish from the ICM cell line taught by Sims et al.

Arguments regarding the 35 USC 102(b) rejections over US Patent 5,057,420; Hyttinen et al and Sims et al are answered here. Applicant argues that the claimed embryos, fetuses, offspring and progeny are made by nuclear transfer using the nucleus from an undifferentiated cell and can be distinguished in that they have the identical genotype as a differentiated cell, fetus or mammal of the same species in existence prior to nuclear transplantation. Applicant argues that neither the '420 patent, Hyttinen or Sims teaches embryos, fetuses, offspring or progeny, or ICM cell lines that were generated from a differentiated cell as defined in the specification. These arguments are not persuasive.

Claims 17-19,20-22,25-27,29,57,59,61,64,66,68 and 71-77 are drawn to products, which applicant is claiming by the process of making them. However, the method of making does not alter a structural feature of the claimed embryos, fetuses, offspring or progeny such that it is distinguished over the embryos, fetuses, offspring or progeny taught in the cite art.

Once nuclear transfer has taken place, there is no claimed distinguishing feature that offers an embryo, fetus, offspring or progeny that is not already contained in the art. As applicant argues, the products are made from differentiated cell nuclei of existing donors, and therefore the donors are known in the art. For example, the cow of Hyttinen, if a nuclei were removed from a differentiated cell of Hyttinen's cow and used in the method claim, would not one obtain a duplicate of the cow? As there are no patentably distinguishing features of the products claimed and none disclosed over those know in the prior art, then the products are the same. While applicant may have a novel method of making embryos, fetuses, offspring and progeny, the is no evidence or argument of record that is convincing that the novel method makes novel methods. Likewise for the ICM cell of claim 29. The use of an ICM cell as in Sims in the claimed method would result in an ICM cell that is identical to that of Sims. Thus there is no patentable distinction imbued on the ICM cell by the method of making it. Again there is no evidence of record or argument provide that establishes a patentable feature to the claimed ICM cells made by the claimed method. As the embryos, fetuses, offspring and progeny are not claimed in a manner to distinguish them over the cite art, '420, Hyttinen and Sims anticipates the embryos, fetuses, offspring and progeny claimed even as amended.

Claims 33,34,78 and 79 remain rejected under 35 U.S.C. 102(b) as being clearly anticipated by Kono et al (1995) Experimental Cell Res. 221, 478-485 for reasons of record.

Claims 33,34,78 and 79 are drawn to differentiated cells and human cells made by a claimed process, and where the cells are not transformed.

Kono teaches differentiated hepatocytes from normal human tissue (page 479, col. 1, parag. 2, lines 1-4). Claims 33 and 34 do not distinguish from the hepatocytes taught by Kono.

Applicant argues that the cells of Kono are transformed and thus are distinguished from applicant's differentiated cells. Applicant argues that the cells claimed are genetically normal. Applicant argues that the claimed cells would have mitochondrial DNA of both the oocyte and donor nuclei and that this provides a distinction to the claimed cells not in the prior art. These arguments are not persuasive.

At the citation of Kono in the previous office action, the cells disclosed are human hepatocytes from normal human liver tissue (page 479, col. 1, parag. 2, lines 1-4). There for these cells are "genetically normal". Cell line HHY41 was cited as the differentiated cells in the rejection. Thus the cells are not transformed as now claimed. As for new claims 78 and 79, the process of nuclear fusion is not claimed to provide a patentable distinction over the prior art differentiated cells. With regard to the mitochondrial DNA, applicant is arguing a limitation not in the claim. Further, there is no evidence of record that the presence of both mitochondria remain in each differentiated cell during the development of the embryo. Does the mitochondria make a patentable distinction to the differentiated cell, if it is present. The specification discloses nothing about the presence or absence of mitochondria, and applicant's arguments are lacking such information. Without further distinction claimed, Kono anticipates the claimed differentiated cells.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 31 remains rejected under 35 U.S.C. 103(a) as being unpatentable over Sims et al (1993) Proced, Natl. Acad. Sci. 90, 6143-6147 in view of Lovell-Badge et al, Cold Spring

Harbor Symp. Quant. Biol, Vol. 50, pages 707-711, Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York, 1985 for reasons of record.

Claim 31 is drawn to a transgenic CICM cell line.

Sims et al teach the culture of ICM cells as cell lines 6-10 (page 6146, col. 1, parag. 2 and table 4). However, Sims does not teach a transgenic CICM cell line. Lovell-Badge teaches mouse embryonic stem cells which have been transformed with a DNA sequence encoding human type II collagen gene (page 708, col. 2, parag. 3, lines 1-4). Motivation is provided by Sims et al stating that embryonic stem cells are derived from ICM cells, and that transgenic embryonic stem cells would be advantageous for the production of cattle(page 6146, col. 2, parag. 6, line 4 to page 6147, line 2).

Applicant argues that the claimed CICM cell line is made by nuclear transfer using the nucleus from an undifferentiated cell and can be distinguished in that they have the identical genotype as a differentiated cell, fetus or mammal of the same species in existence prior to nuclear transplantation. Applicant argues that Sims does not teach ICM cell lines that were generated from a differentiated cell as defined in the specification. These arguments are not persuasive.

As stated above, the claiming of a product by the method of making the product does not imbue patentable distinction over the art disclosed product unless the method provides a novel and not anticipated characteristic or structural feature. The ICM cell line is not claimed to have any feature to distinguish it from the ICM cell line of Sims. If the ICM cell line of Sims was used a donor in nuclear transfer would not the resulting ICM of the embryo be the same? Thus Sims anticipated the claims even as amended.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deborah Crouch, Ph.D. whose telephone number is (703) 308-1126.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0196.

The fax number is (703) 308-4242.

Deborah Crouch

DEBORAH CROUCH
PRIMARY EXAMINER
GROUP ~~1800~~ 1632

Dr. D. Crouch
June 19, 1998